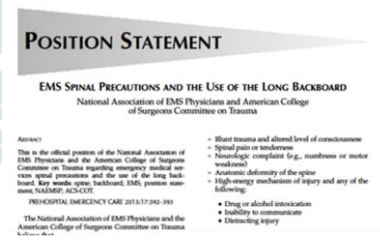
Spinal Injury Assessment Protocol
&
Spinal Precautions Procedure
New Michigan Protocols

Robert M. Domeier, MD, EMS Medical Director,
Washtenaw/Livingston Medical Control Authority
For the Michigan EMS QA Committee
Medical Control Seminar 2014

Latest Spinal Injury Guidelines

- In July, 2013, NAEMSP and ACS-COT released a joint position paper on "EMS Spinal Precautions and the Use of the Long Backboard"



POSITION STATEMENT

EMS SPINAL PRECAUTIONS AND THE USE OF THE LONG BACKBOARD

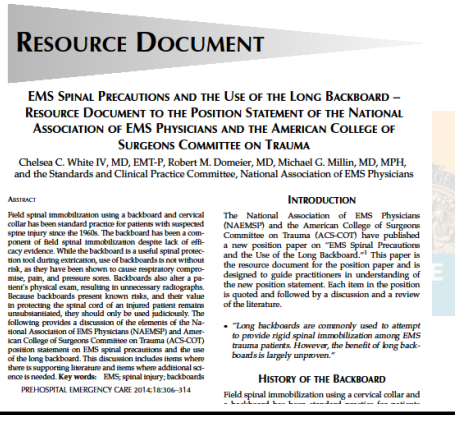
National Association of EMS Physicians and American College of Surgeons Committee on Trauma

Latest Spinal Injury Guidelines

- Highlights:
  - Utilization of backboards for spinal immobilization during transport should be judicious, so that the potential benefits outweigh the risks
  - Patients with penetrating trauma to the head, neck, or torso and no evidence of spinal injury should not be immobilized on a backboard

Latest Clinical Guidelines

- Highlights:
  - Spinal precautions can be maintained by application of a rigid cervical collar and securing the patient to the EMS stretcher, and may be most appropriate for:
    - Patients who are found to be ambulatory at the scene
    - Patients who must be transported for a protracted time, particularly prior to interfacility transfer



RESOURCE DOCUMENT

EMS SPINAL PRECAUTIONS AND THE USE OF THE LONG BACKBOARD – RESOURCE DOCUMENT TO THE POSITION STATEMENT OF THE NATIONAL ASSOCIATION OF EMS PHYSICIANS AND THE AMERICAN COLLEGE OF SURGEONS COMMITTEE ON TRAUMA

Chelsea C. White IV, MD, EMT-P, Robert M. Domeier, MD, Michael G. Millin, MD, MPH, and the Standards and Clinical Practice Committee, National Association of EMS Physicians

Brief History

- 1960 & 70s - Spinal Immobilization with a backboard became universal for any patient with a mechanism of injury which might cause a spinal injury.
- 1980s - ED Clinical Spinal Clearance based on clinical assessment becomes common.
- 1990 - 2000s – EMS Selective Immobilization becomes common. 40% reduction in backboard use.

Brief History

- 1980s, 90s & 00s – Downsides of backboards presented
  - Pain
  - Respiratory compromise
  - Pressure sores
  - Immobilization largely ineffective
  - Likely to cause more harm than benefit
- Backboards have NOT been shown to prevent:
  - Spinal movement
  - Further neurologic injury

Brief History

- 2000s & 2010s – Trauma Centers & Hospitals remove patients from backboards as soon as possible even in a patient with a clear injury to minimized the downsides of backboard immobilization.
- Spinal precautions maintained in selected patients with collar and hospital stetcher.

Recommendation

- Best available evidence supports removing patients from backboards as soon as possible, even if spinal injury is suspected
- This already happens in most EDs shortly after a backboarded patient arrives
- Given the similarities between an ambulance cot and an ED cot, patients with suspected spinal injury should be removed from the backboard once safely on the ambulance cot

NEW Michigan Protocol for Spine Injury Assessment:

Spinal Injury Assessment

Pre-Medical Control
MFR/EMT/SPECIALIST/PARAMEDIC

1. Follow **General Pre-hospital Care protocol**.
2. Assess the mechanism of injury.
3. A patient with a negative mechanism does not need a spine injury clinical assessment
4. Patients with mechanism of injury with the potential for causing spine injury shall have a spine injury clinical assessment performed.
5. Clinical criteria are used as the basis for assessment. If any of the clinical criteria are present or if the assessment cannot be completed, the patient has a positive spine injury assessment.
6. If the mechanism of injury with the potential for causing spine injury exists, the following clinical criteria are assessed:
   A. Altered mental status
   B. Use of intoxicants
   C. Significant distracting painful injury
   D. Motor and/or sensory deficit
   E. Spine pain and/or tenderness
7. If any of the clinical criteria are present the patient has a positive spine injury assessment. If none of the clinical criteria are present the patient has a negative spine injury assessment.
8. Patients with a positive spine injury assessment should have spinal precautions maintained during movement and transport. Refer to **Spinal Precautions Procedure.**

Patients over the age of 65 with a mechanism of injury with the potential for causing spine injury will have a cervical collar applied even if the spinal injury clinical assessment is negative. Refer to **Spinal Precautions Procedure.**

If mechanism exists for spinal injury:

- Examples:
  - Fall
  - Motor vehicle crash
  - Assault with significant head, neck, or back trauma
  - Anything else that could cause spinal injury

Perform Spinal Assessment

- 6.A-C. Evaluate if the patient can give a reliable exam: Look for:
  - Are they altered?
  - Are they intoxicated?
  - Are they distracted by other injury?

Perform Spinal Injury Assessment

- Any unexplained focal motor or sensory neurologic deficit
- Pain or tenderness in posterior midline over spine

Spinal Injury Assessment

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MFR/EMT/SPECIALIST/PARAMEDIC

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Positive Spinal Assessment

Spinal Injury Assessment

Pre-Medical Control
MFR/EMT/SPECIALIST/PARAMEDIC

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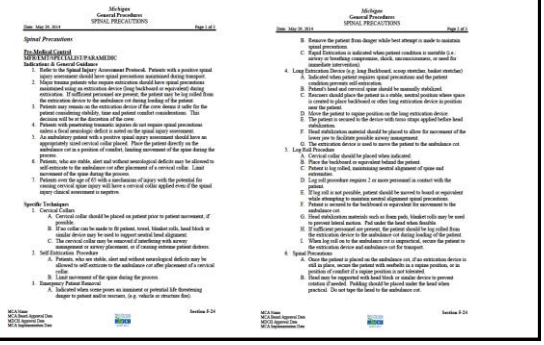
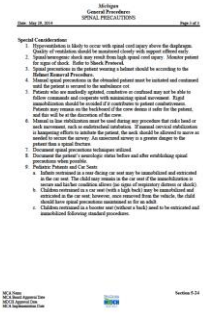
Michigan Spinal Precautions Procedure



Michigan Spinal Precautions Procedure



Spinal Precautions Procedure

Pre-Medical Control
MFR/EMT/SPECIALIST/PARAMEDIC
Indications & General Guidance

1. Refer to the **Spinal Injury Assessment Protocol.** Patients with a positive spinal injury assessment should have spinal precautions maintained during transport.
2. Major trauma patients who require extrication should have spinal precautions maintained using an extrication device (long backboard or equivalent) during extrication. If sufficient personnel are present, the patient may be log rolled from the extrication device to the ambulance cot during loading of the patient.
3. Patients may remain on the extrication device if the crew deems it safer for the patient considering stability, time and patient comfort considerations. This decision will be at the discretion of the crew.

1. Spine Injury Assessment Procedure selects patients with an indication for Spinal Precautions.
2. Extrication is still done with a backboard or equivalent. Log roll onto the ambulance cot if appropriate.
3. Keep on backboard for transport if safer for patient considering stability, safety and patient comfort.

Spinal Precautions Procedure

Indications & General Guidance

4. Patients with penetrating traumatic injuries do not require spinal precautions unless a focal neurologic deficit is noted on the spinal injury assessment.
5. An ambulatory patient with a positive spinal injury assessment should have an appropriately sized cervical collar placed. Place the patient directly on the ambulance cot in a position of comfort, limiting movement of the spine during the process.
6. Patients, who are stable, alert and without neurological deficits may be allowed to self-extricate to the ambulance cot after placement of a cervical collar. Limit movement of the spine during the process.

Notes:

4. Penetrating trauma patients do not require spinal precautions. If a neurologic deficit is noted maintain spinal precautions but no backboard is needed.
5. For ambulatory patients with a positive assessment place a collar and put the patient on the ambulance cot. No standing takedowns.
6. Patients may self-extricate when possible.

Patients who self extricate have less cervical motion than when extricated by rescuers.

Spinal Precautions Procedure

Indications & General Guidance
7. Patients over the age of 65 with a mechanism of injury with the potential for causing cervical spine injury will have a cervical collar applied even if the spinal injury clinical assessment is negative.

Notes:
7. Place the patient over 65 with a potential mechanism and negative injury assessment in a collar in a position of comfort

Why?
•Our spinal assessment tool – the same one we have used for years to decide whether or not to backboard – is not 100% accurate (but it is very close)
•Most of the "false negatives" are in patients >65

Spinal Precautions Procedure

Specific Techniques
1. Cervical Collars
A. Cervical collar should be placed on patient prior to patient movement, if possible.
B. If no collar can be made to fit patient, towel, blanket rolls, head block or similar device may be used to support neutral head alignment.
C. The cervical collar may be removed if interfering with airway management or airway placement, or if causing extreme patient distress.
2. Self-Extrication Procedure
A. Patients, who are stable, alert and without neurological deficits may be allowed to self-extricate to the ambulance cot after placement of a cervical collar.
B. Limit movement of the spine during the process.
3. Emergency Patient Removal
A. Indicated when scene poses an imminent or potential life threatening danger to patient and/or rescuers, (e.g. vehicle or structure fire).
B. Remove the patient from danger while best attempt is made to maintain spinal precautions.
C. Rapid Extrication is indicated when patient condition is unstable (i.e.: airway or breathing compromise, shock, unconsciousness, or need for immediate intervention).
4. Long Extrication Device *(e.g. long Backboard, scoop stretcher, basket stretcher)*
A. Indicated when patient requires spinal precautions and the patient condition prevents self-extrication.
B. Patient's head and cervical spine should be manually stabilized.
C. Rescuers should place the patient in a stable, neutral position where space is created to place backboard or other long extrication device in position near the patient.
D. Move the patient to supine position on the long extrication device.
E. The patient is secured to the device with torso straps applied before head stabilization.
F. Head stabilization material should be placed to allow for movement of the lower jaw to facilitate possible airway management.
G. The extrication device is used to move the patient to the ambulance cot.

Spinal Precautions Procedure

Specific Techniques
5. Log Roll Procedure
A. Cervical collar should be placed when indicated.
B. Place the backboard or equivalent behind the patient.
C. Patient is log rolled, maintaining neutral alignment of spine and extremities.
D. Log roll procedure requires 2 or more personnel in contact with the patient.
E. If log roll is not possible, patient should be moved to board or equivalent while attempting to maintain neutral alignment spinal precautions.
F. Patient is secured to the backboard or equivalent for movement to the ambulance cot.
G. Head stabilization materials such as foam pads, blanket rolls may be used to prevent lateral motion. Pad under the head when feasible.
H. If sufficient personnel are present, the patient should be log rolled from the extrication device to the ambulance cot during loading of the patient.
I. When log roll on to the ambulance cot is impractical, secure the patient to the extrication device and ambulance cot for transport.

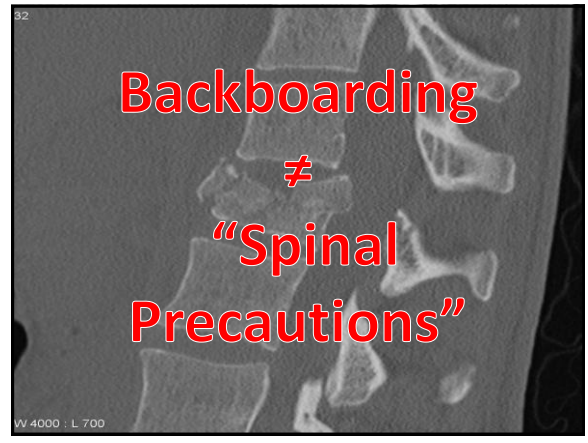
6. Spinal Precautions
A. Once the patient is placed on the ambulance cot, if no extrication device is still in place, secure the patient with seatbelts in a supine position, or in position of comfort if a supine position is not tolerated.
B. Head may be supported with head block or similar device to prevent rotation if needed. Padding should be placed under the head when practical. Do not tape the head to the ambulance cot.

Spinal Precautions Procedure

Special Considerations
1. Hypoventilation is likely to occur with spinal cord injury above the diaphragm. Quality of ventilation should be monitored closely with support offered early.
2. Spinal/neurogenic shock may result from high spinal cord injury. Monitor patient for signs of shock. Refer to **Shock Protocol.**
3. Spinal precautions in the patient wearing a helmet should be according to the **Helmet Removal Procedure.**
4. Manual spinal precautions in the obtunded patient must be initiated and continued until the patient is secured to the ambulance cot.
5. Patients who are markedly agitated, combative or confused may not be able to follow commands and cooperate with minimizing spinal movement. Rigid immobilization should be avoided if it contributes to patient combativeness. Patients may remain on the backboard if the crew deems it safer for the patient, and this will be at the discretion of the crew.

Spinal Precautions Procedure

Special Considerations
6. Manual in line stabilization must be used during any procedure that risks head or neck movement, such as endotracheal intubation. If manual cervical stabilization is hampering efforts to intubate the patient, the neck should be allowed to move as needed to secure the airway. An unsecured airway is a greater danger to the patient than a spinal fracture.
7. Document spinal precautions techniques utilized.
8. Document the patient's neurologic status before and after establishing spinal precautions when possible.
9. Pediatric Patients and Car Seats:
a. Infants restrained in a rear-facing car seat may be immobilized and extricated in the car seat. The child may remain in the car seat if the immobilization is secure and his/her condition allows (no signs of respiratory distress or shock).
b. Children restrained in a car seat (with a high back) may be immobilized and extricated in the car seat; however, once removed from the vehicle, the child should have spinal precautions maintained as for an adult.
c. Children restrained in a booster seat (without a back) need to be extricated and immobilized following standard procedures.



Spinal Precautions Procedure - Techniques

Robert M. Domeier, MD, FACEP
EMS Medical Director,
Washtenaw/Livingston Medical Control Authority

Cervical Spine Stabilization Techniques – 2 hand manual

Cervical Spine Stabilization Techniques – 2 arm squeeze

Alert Patient - Self Extrication

- Assist the patient as needed to exit the crash setting.
- The patient's effort and collar are used for cervical stabilization.
- Addition manual stabilization is not needed.

Alert Patient - Self Extrication

- Place the patient in a position of comfort on the ambulance cot.

Unconscious Rapid Extrication

Unconscious Rapid Extrication

- If time & patient condition do not permit a log roll onto the ambulance cot, secure the patient as done previously, except do not tape the head to the board.
- Head bed, towels or similar are acceptable head stabilizers provided the head is not taped to a board or ambulance cot.
- Log roll off the board may be quicker than securing with straps.

Moving the Patient – Using an extrication device

- Use log roll or multi-person lift to place the patient on the extrication device.

Moving an extricated patient over rough terrain to the cot

Moving an extricated patient over rough terrain to the cot

- Move the patient to the ambulance cot

Moving the Patient – Awake patient strapped to device to cot in ambulance

- The awake patient may have the cervical spine stabilized with a collar only during movement to the ambulance.

Moving the Patient – Multi-person lift technique

- Using multiple rescuers, position the rescuer arms under the patient.

Log Roll Techniques – Removing the board, 2 person

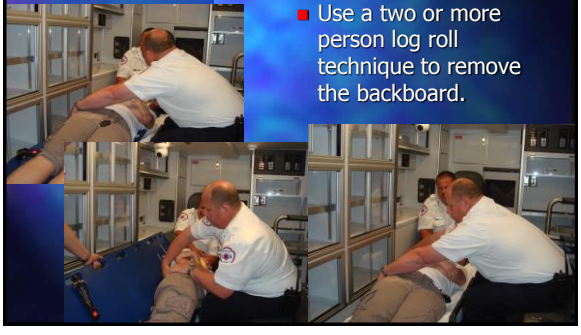
Log Roll Techniques – Removing the board, 2 person

Log Roll Techniques – 2 person

Log Roll Techniques – Removing the board in the ambulance

- If time & patient condition permit remove the patient from the extrication device.
- Remove any straps used for patient movement to the ambulance.

Log Roll Techniques – Removing the board in the ambulance



- Use a two or more person log roll technique to remove the backboard.

Spinal Precautions used for Patient Transport

- Secure the patient to the ambulance cot using standard techniques.
- For intact patients a collar alone is adequate.

Spinal Precautions used for Patient Transport

- If additional support is needed use a head bed or towel rolls or equivalent.
- Do not tape the head to the cot or extrication device.

Alternate Extrication Devices

- Pole stretcher, scoop stretcher or other extrication device may be used to move the patient.
- Log roll or multi-person lift onto the extrication device.

Final Words

- Do not transport on a backboard unless time & patient condition do not permit a log roll off the board.
- No backboard for ambulatory patients.
- No backboard for penetrating trauma.
- Self extrication may be performed when indicated.
- No backboard for interfacility transports.

Final Words

- Log roll or multi-person lift techniques useful for placing a patient on an extrication device or ambulance cot.
- Transport patients in a position of comfort as needed.
- Do not tape the patient's head to the extrication device or ambulance cot.
- Minimize rigid extrication device use for transport.

Questions?